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Amendments to the Claims

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims

Claims 1-14 (Canceled).

15. (original) A method for forming a mutagenized DNA molecule encoding an enzyme having protox activity from at least two non-identical template DNA molecules encoding enzymes having protox activity, said method comprising the steps of:

- sub
D
- a) adding to the template DNA molecules at least one oligonucleotide comprising an area of identity to each of the template DNA molecule;
 - b) denaturing the resultant mixture into single-stranded molecules;
 - c) incubating the resultant population of single-stranded molecules with a polymerase under conditions that result in the annealing of the oligonucleotides to the template DNA molecules, wherein the conditions for polymerization by the polymerase are such that polymerization products corresponding to a portion of the template DNA molecules are obtained;
 - d) repeating the second and third steps for at least two further cycles, wherein the extension products obtained in step c) are able to switch template DNA molecule for polymerization in the next cycle, thereby forming a mutagenized double-stranded polynucleotide comprising sequences derived from different template DNA molecules;

wherein the mutagenized double-stranded polynucleotide encodes a protox enzyme having enhanced tolerance to a herbicide that inhibits the protox activity encoded by the template DNA molecules.

16. (original) The method of claim 15, wherein at least one template DNA molecule is derived from a eukaryote.

17. (original) The method of claim 16, wherein said eukaryote is a higher eukaryote.

18. (original) The method of claim 17, wherein said higher eukaryote is a plant.

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19. (original) The method of claim 17, wherein said plant is selected from the group consisting of *Arabidopsis thaliana*, oilseed rape, soybean, sugarbeet, cotton, maize, wheat, rice, sugarcane, and sorghum.

20. (original) The method of claim 17, wherein at least one said template DNA molecule derived from said plant comprises at least one mutation and encodes a modified protoporphyrinogen oxidase (protox) having at least one amino acid modification, wherein said modified protox is tolerant to a herbicide in amounts that inhibit said protox.

21. (amended once) The method of claim 20, wherein at least one said template DNA molecule is further characterized in that at least one of the following conditions is met:

- SUB
D1
CO24
Q1
CO24
- (a) said template DNA molecule has a sequence that encodes amino acid sub-sequence $AP\Delta_1F$, wherein Δ_1 is an amino acid other than arginine;
 - (b) said template DNA molecule has a sequence that encodes amino acid sub-sequence $F\Delta_2S$, wherein Δ_2 is an amino acid other than cysteine;
 - (c) said template DNA molecule has a sequence that encodes amino acid sub-sequence $Y\Delta_3G$, wherein Δ_3 is an amino acid other than alanine;
 - (d) said template DNA molecule has a sequence that encodes amino acid sub-sequence $A\Delta_4D$, wherein Δ_4 is an amino acid other than glycine;
 - (e) said template DNA molecule has a sequence that encodes amino acid sub-sequence $Y\Delta_5P$, wherein Δ_5 is an amino acid other than proline;
 - (f) said template DNA molecule has a sequence that encodes amino acid sub-sequence $P\Delta_6A$, wherein Δ_6 is an amino acid other than valine;
 - (g) said template DNA molecule has a sequence that encodes amino acid sub-sequence Δ_7IG , wherein Δ_7 is an amino acid other than tyrosine;
 - (h) said template DNA molecule has a sequence that encodes amino acid sub-sequence $YIGG\Delta_8$, wherein Δ_8 is an amino acid other than alanine or serine;
 - (i) said template DNA molecule has a sequence that encodes amino acid sub-sequence $A\Delta_9P$, wherein Δ_9 is an amino acid other than isoleucine;
 - (j) said template DNA molecule has a sequence that encodes amino acid sub-sequence $G\Delta_{10}A$, wherein Δ_{10} is an amino acid other than valine;

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(k) said template DNA molecule has a sequence that encodes amino acid sub-sequence $Y\Delta_3G$, wherein Δ_3 is an amino acid other than alanine, and said template DNA molecule also has a sequence that encodes one of the group consisting of:

- Sub
D1
C24
- (1) sub-sequence $Q\Delta_{11}S$, wherein Δ_{11} is an amino acid other than proline,
 - (2) sub-sequence $IGG\Delta_{12}$, wherein Δ_{12} is an amino acid other than threonine,
 - (3) sub-sequence $SWXL\Delta_{13}$, wherein Δ_{13} is an amino acid other than serine,
 - (4) sub-sequence $L\Delta_{14}Y$, wherein Δ_{14} is an amino acid other than asparagine, and
 - (5) sub-sequence $G\Delta_{15}XGL$, wherein Δ_{15} is an amino acid other than tyrosine;

(l) said template DNA molecule has a sequence that encodes amino acid sub-sequence Δ_7G , wherein Δ_7 is an amino acid other than tyrosine, and said template DNA molecule also has a sequence that encodes one of the group consisting of:

- C1
C24
- (1) sub-sequence $Q\Delta_{11}S$, wherein Δ_{11} is an amino acid other than proline,
 - (2) sub-sequence $IGG\Delta_{12}$, wherein Δ_{12} is an amino acid other than threonine,
 - (3) sub-sequence $SWXL\Delta_{13}$, wherein Δ_{13} is an amino acid other than serine,
 - (4) sub-sequence $L\Delta_{14}Y$, wherein Δ_{14} is an amino acid other than asparagine, and
 - (5) sub-sequence $G\Delta_{15}XGL$, wherein Δ_{15} is an amino acid other than tyrosine; and

(m) said template DNA molecule has a sequence that encodes amino acid sub-sequence $T\Delta_{16}G$, wherein Δ_{16} is an amino acid other than leucine, and said template DNA molecule also has a sequence that encodes amino acid sub-sequence $YV\Delta_{17}G$, wherein Δ_{17} is an amino acid other than alanine.

22. (original) The method of claim 15, wherein at least one said template DNA molecule is derived from a prokaryote.

23. (original) The method of claim 15, wherein said herbicide is selected from the group consisting of an aryluracil, a diphenylether, an oxidiazole, an imide, a phenyl pyrazole, a pyridyl pyrazole, a pyridine derivative, a 3-substituted-2-aryl-4,5,6,7-tetrahydroindazole, a phenopylate and O-phenylpyrrolidino- and piperidinocarbamate analogs of said phenopylate.

24-27

Claims ~~24-25~~ (Canceled).

28-34

Please add new claims ~~26-33~~ as follows:

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28
26. (New) A construct comprising the following components in the 5' to 3' direction of transcription:

- SUB D1*
codi
126
- a) a promoter functional in a plant plastid;
 - b) a DNA sequence encoding a peptide derived from an eukaryotic organism; and
 - c) a transcription termination region; and

the construct further comprising a ribosome binding site joined to said promoter component, said ribosome binding site heterologous to said promoter;

wherein said DNA sequence encoding a eukaryotic peptide is heterologous to a plant plastid.

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27. (New) The construct according to claim *26* wherein said DNA sequence encodes a plant nuclear peptide.

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28. (New) A plant cell plastid containing the construct according to claim *26*.

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29. (New) A plant, plant seed, plant cell or progeny thereof each containing a plant plastid according to claim *28*.

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30. (New) A method for producing a protein in a plant cell, wherein said method comprises transforming plastids of said plant cell with a construct comprising the following as operably joined components in the 5' to 3' direction of transcription:

- (a) a promoter functional in a plant plastid;
- (b) a DNA sequence encoding a peptide of an eukaryotic cell other than a peptide of a plant plastid; and
- (c) a transcription termination region,

the construct further comprising a ribosome binding site joined to said promoter, said ribosome binding site heterologous to said promoter;

wherein said DNA sequence encoding a peptide of an eukaryotic cell is heterologous to a plant plastid;

and growing plant cells comprising said transformed plastids under conditions wherein said DNA sequence is expressed to produce said eukaryotic peptide in said plastid.

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31. (New) A plant cell having a transformed plastid produced according to the method of claim *30*.

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32. (New) A plant, plant seed or plant part each comprising a plant cell according to claim *31*.

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37. (New) The method according to claim 30 wherein said eukaryotic peptide encoded by said DNA sequence from said construct in said transformed plant plastid is bioactive when isolated from said transformed plant plastid.

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